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蝶と蛾 *Lepidoptera Science* **62** (1): 1–11, May 2011

Report of surveys on the early stages of butterflies in the Nanling area (3)

Motohiro HARADA[1], Yoshimi OHSHIMA[2], Yoshikazu YOSHIDA[3] and WANG Min[4]

[1] 703-35 Tebiro, Kamakura-shi, Kanagawa, 248-0036 Japan
[2] 1-34-3 Numabukuro, Nakano-ku, Tokyo, 165-0025 Japan
[3] 3-4-8 Yumemino, Matsubushi-machi Kitakatsushika-gun, Saitama, 343-0113 Japan
[4] Department of Entomology, South China Agricultural University, Guangzhou, Guangdong, 510640 China

Abstract This is the third report of surveys on early stages of butterflies in the Nanling area. We observed about 35 more species, including larvae of *Agehana elwesi*, *Lethe satyrina*, *Lethe trimacula*, *Sasakia charonda*, *Neptis manasa*, ova of *Chrysozephyrus rarasanus*, *Tongeia potanini*.

Key words ovum, larva, pupa, Guangdong (China), *Agehana elwesi*, *Lethe satyrina*, *Lethe trimacula*, *Sasakia charonda*, *Neptis manasa*, *Chrysozephyrus rarasanus*, *Tongeia potanini*, Nanling Nature Reserve.

Introduction

We describe a continuing survey on the morphology, food plants, and habits of early stages of butterflies in the Nanling area (Harada *et al.*, 2009, 2010). We have visited the Nanling area twice a year, in summer to study feeding and growth of larvae and the flight of adults, and in winter to study hibernation. We have observed many species and have continued to record new data.

More than 500 species of butterflies are known from Guangdong, most of them from the Nanling mountain area.

Methods

The third year expeditions took place from December 11~17, 2008, August 6~14, and December 9~17, 2009. During these periods we observed ova, larvae and pupae of many species of butterflies.

We also captured the following female butterflies and tried to obtain ova* in August.

Papilio nephelus, *Melanitis leda*, *Lethe satyrina*, *Neope muirheadi*, *Neorina patria*, *Ypthima conjuncta*.

Result of Surveys

The additional species of which we found early stages, and their food plants are as follows:

PAPILIONIDAE

Papilio bianor (Larva) *Phellodendron amurense* / Rutaceae

Papilio nephelus (Larva) *Phellodendron amurense* / Rutaceae

Papilio protenor (Larva) *Citrus* sp. / Rutaceae

PIERIDAE

Talbotia nagana (Ovum, Larva) *Bretschneidera sinensis* / Bretschneideraceae

NYMPHALIDAE
(MORPHINAE-AMATHUSIINI)

Aemona amathusia (Pupa)

(SATYRINAE)

Melanitis leda (Ovum*) *Miscanthus* sp. / Gramineae

Melanitis phedima (Ovum*, Larva) *Miscanthus* sp. / Gramineae

Lethe christophi (Larva) *Phyllostachys* sp. / Gramineae

Lethe helena (Larva) *Phyllostachys* sp. / Gramineae

Lethe satyrina (Larva, Ovum*) *Scleria terrestiris* / Cyperaceae, *Miscanthus* sp. / Gramineae

Lethe syrcis (Larva) *Phyllostachys* sp. / Gramineae

Neope yama (Ovum) *Phyllostachys* sp. / Gramineae

Neope muirheadi (Ovum*) *Phyllostachys* sp. / Gramineae

Mycalesis francisca (Larva) Gramineae

Neorina patria (Ovum*) *Phyllostachys* sp. / Gramineae

Palaeonympha opalina (Larva) *Phyllostachys* sp. / Gramineae

Ypthima praenubila (Ovum*) Gramineae

(NYMPHALINAE)

Stibochiona nicea (Larva) *Boehmeria macrophylla* / Urticaceae

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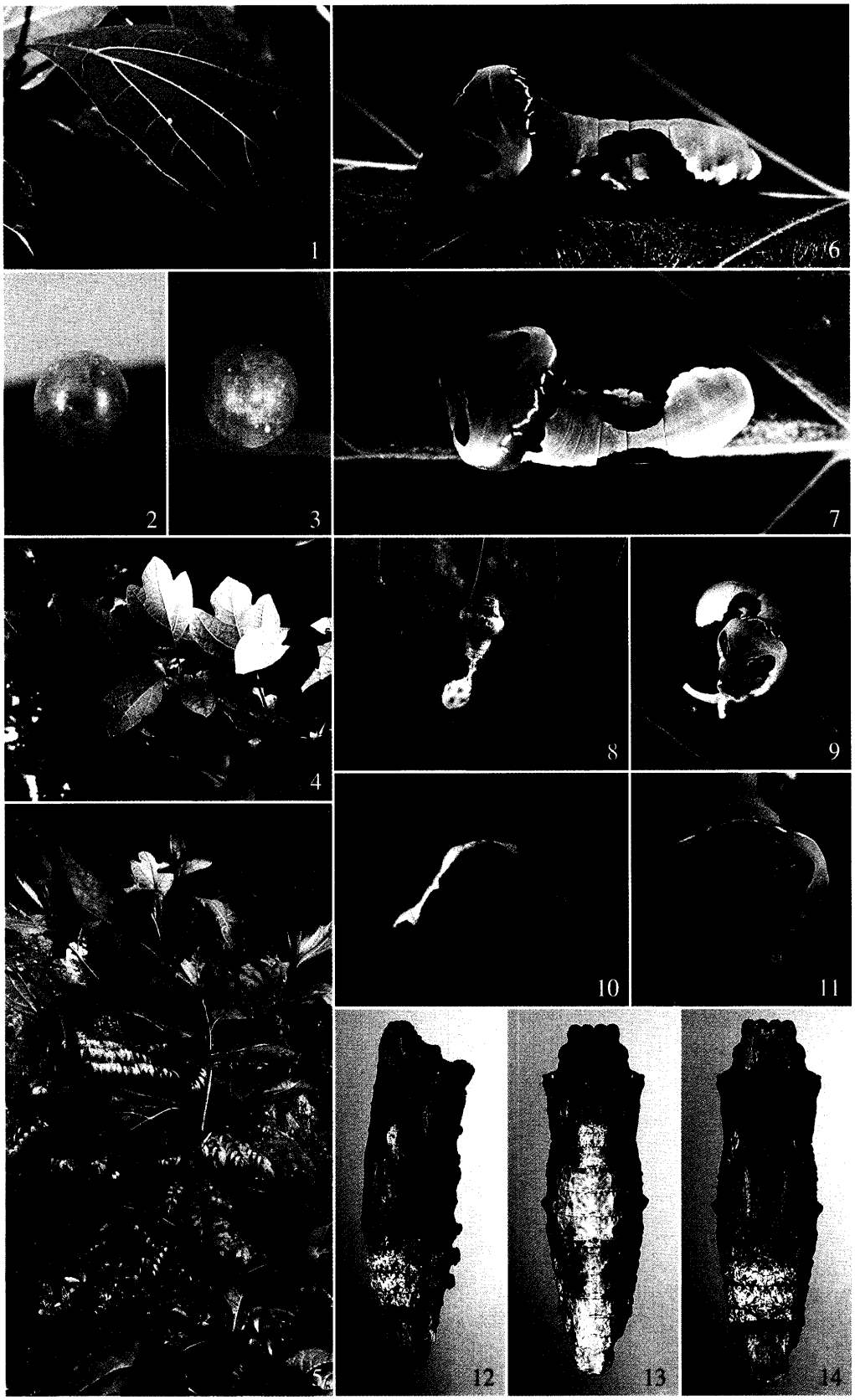

Figs 1–14. *Agehana elwesi*.
1–3: Ovum. 4–5: Food plant (*Sasafras tsumu*). 6–7: Last instar larva. 8: 4th instar larva.
9: Osmeterium. 10–11: Last instar larva head. 12–14: Pupa.

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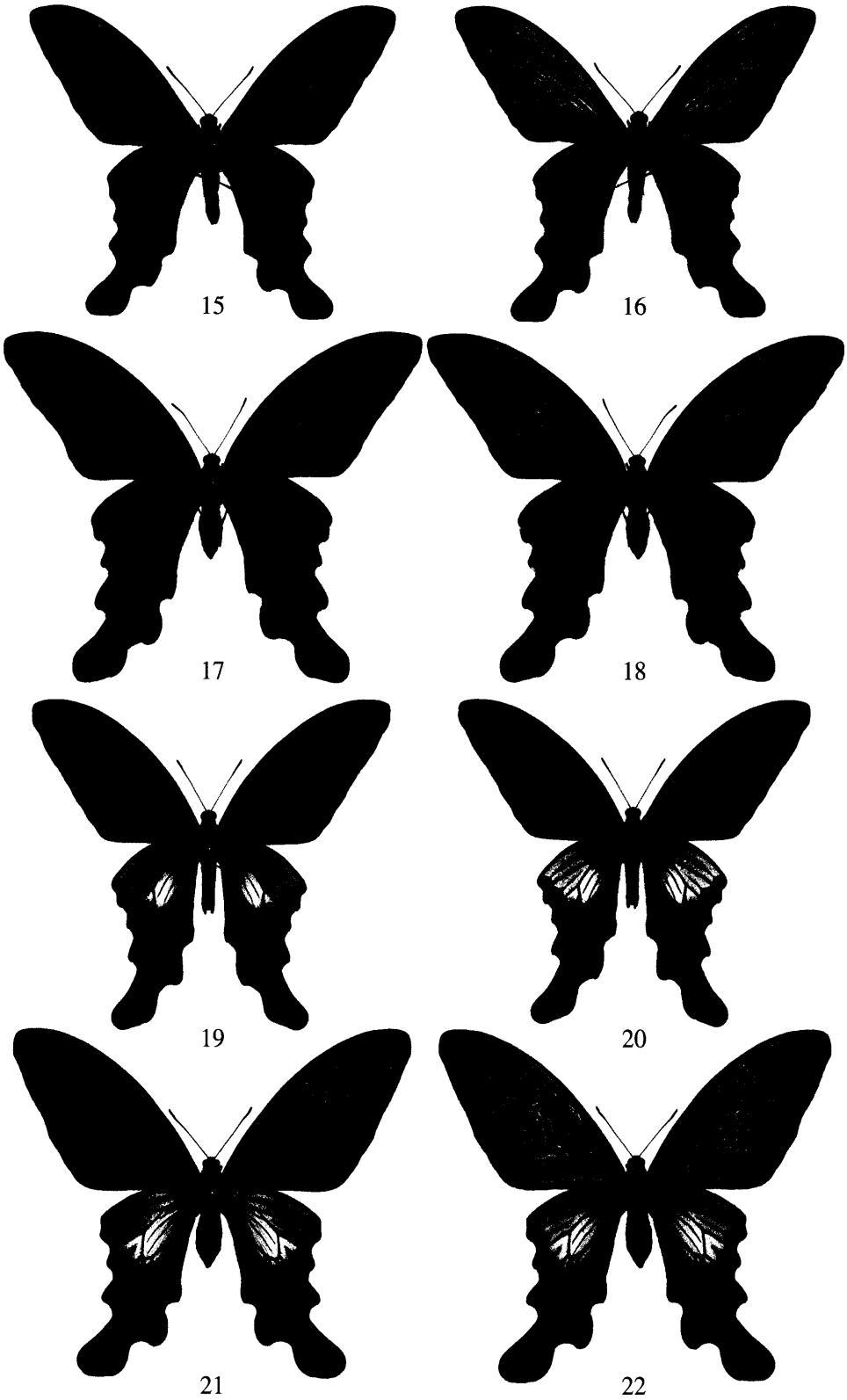

Figs 15–22. Wing pattern variations of *Agehana elwesi*.
15–16: Male (Black type). 17–18: Female (Black type). 19–20: Male (White spot type).
21–22: Female (White spot type).

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Dichorragia nesimachus (Larva) *Meliosma* sp. / Sabiaceae

Athyma jina (Larva) *Lonicera* sp. / Caprifoliaceae

Neptis clinia (Larva) *Celtis biondii* / Urticaceae

Junonia orithya (Larva) *Justicia* sp. / Acanthaceae

LYCAENIDAE

Taraka hamada (Larva) (aphis on *Phyllostachys* sp. / Gramineae)

Chrysozephyrus rarasanus (Ovum) *Quercus sessilifolia* / Fagaceae

Chrysozephyrus ataxus (Ovum) *Quercus sassilifolia* / Fagaceae

Cordelia comes (Ovum) *Carpinus* sp. / Betulaceae

Celastrina lavendularis ? (Ovum) *Lithocarpus* sp. / Fagaceae

Chilades pandava (Ovum, Larva, Pupa) *Cycas revolute* / Cycadaceae

HESPERIIDAE

Satarupa monbeigi (Larva) *Zanthoxylum schinifolium* / Rutaceae

Satarupa valentini (Larva) *Phellodendron amurense* / Rutaceae

Seseria dohertyi (Larva) *Cinnamomum camphora* / Lauraceae

Tagiades litigiosa (Larva) *Dioscorea* sp. / Dioscoreaceae

Tagiades menaka (Larva) *Dioscorea* sp. / Dioscoreaceae

Notocrypta curvifascia (Larva) *Alpinia* sp. / Zingiberaceae

Apostictopterus fuliginosus (Larva) *Phyllostachys* sp. / Gramineae

Telicota ohara (Larva) *Setalia palmifolia* / Graminiae

We note some species of particular interest as follows:

(1) A*gehana elwesi* (Figs 1–22)

Habitat: Along sunlit open valley about 800~1000m in altitude.

Larval food plant: *Liriodendron chinense* / Magnoliaceae, *Sasafras tsumu* / Lauraceae
The larva fed well on *L. tulipifera*.

Ovum: The ovum, which was found on the upper side of young leaves, is of a similar green color to the young leaves.
Sometimes over ten ova were found on a leaf, and must have been laid by multiple females. In these cases a high percentage of the ova were invaded by parasites.

Larva: The young larva eats young leaves, and moves to mature leaves as it develops. The larva always rests on the upper side of the leaf until the last instar.

Pupa: The pupa is found on the underside of branches or nearby substrates.

(2) *Lethe satyrina* (Figs 23–36)

Habitat: Along valleys about 1000m in altitude.

Larval food plant: *Scleria terrestiris* / Cyperaceae. (Same as *Nosea hainanensis*)
Miscanthus sp. / Gramineae (found by Dr M. Yago in June, 2010)

Larva: We observed overwintering larvae on leaves. They feed gradually even in winter.
The larvae show two color types, green and pale brown.

Pupa: The pupa is green in color.
This is the first report on the early stages.

(3) *Lethe trimacula* (Figs 37–48)

Habitat: Bright low forest edges along valleys about 1000 m in altitude.

Larval food plant: *Scleria terrestris* / Cyperaceae

Larva: The larvae are yellowish green in color with a black head. They hibernate in the third instar.

Pupa: The pupa is reddish brown in color. Pupation occurs on a low part of the food plant.
This is the first report on the early stages.

(4) *Sasakia charonda* (Figs 49–59)

Habitat: Forest about 500~1200m in altitude.

We found overwintering larvae in two locations.

The first was at the foot of Wushi-shan 500m in altitude, with a covering of trees of *Quercus*, *Castanopsis*, *Celtis*, *Machilus*, *Carpinus*, *Albizzia*, *Cryptomeria* (planted), Bamboos, and bushes of *Phyllostachys*, *Aristlochia*, *Marsdenia*, *Persicaria*, *Viburnum*, *Dioscorea*. We found overwintering larvae under trees of *Celtis sinensis* and *C. biondii*.

The second location was among woods along a valley at 1200m in altitude, where we also found ova of *Chrysozephyrus rarasanus*. We found overwintering larvae under trees of *C. vandervoetiana*, which are 15m in height and 20cm in diameter, but lack spreading branches.

In the Nanling area two *Sasakia* species occur, but *S. funebris* is more common. *S. charonda* is rather rare, and we found only 7 larvae in four years, in each case singly beneath the tree.

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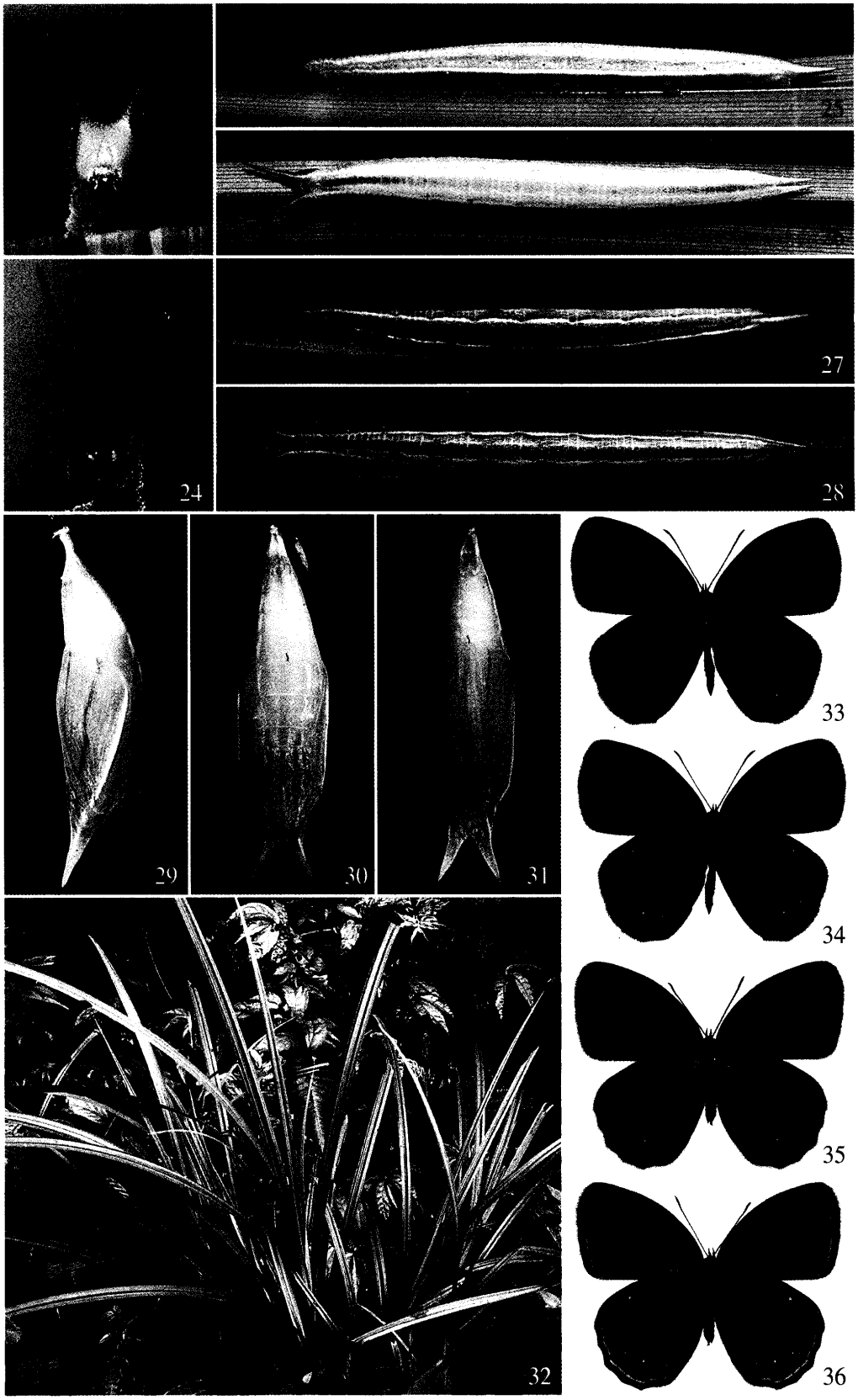

Figs 23–36. *Lethe satyrina*.
23–24: Last instar larva head. 25–28: Last instar larva. 29–31: Pupa. 32: Food plant (*Scleria terrestiris*). 33–34: Male. 35–36: Female.

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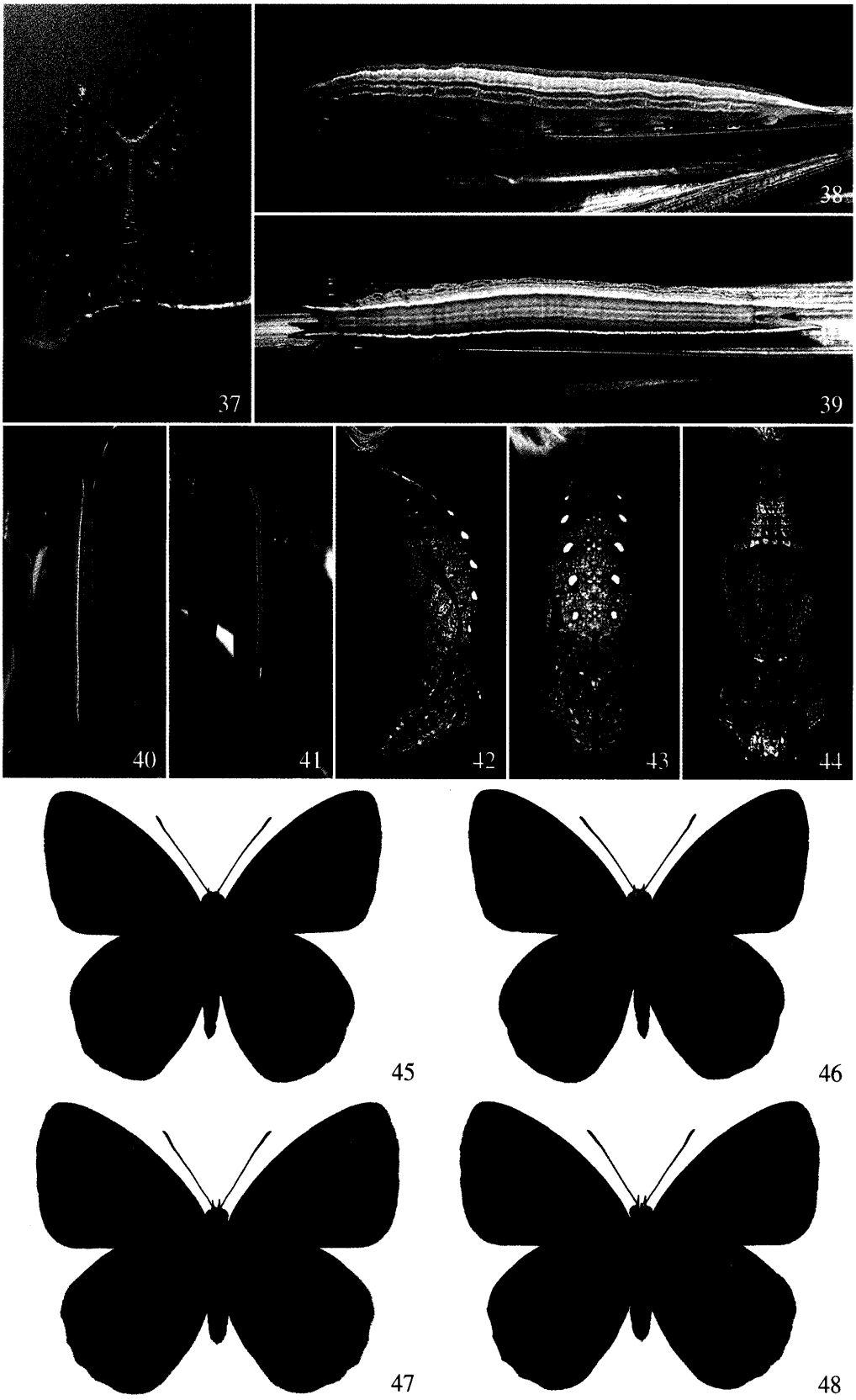

Figs 37–48. *Lethe trimacula*.
37: Last instar larva head. 38–39: Last instar larva. 40–41: 4th instar larva. 42–44: Pupa. 45–46: Male. 47–48: Female.

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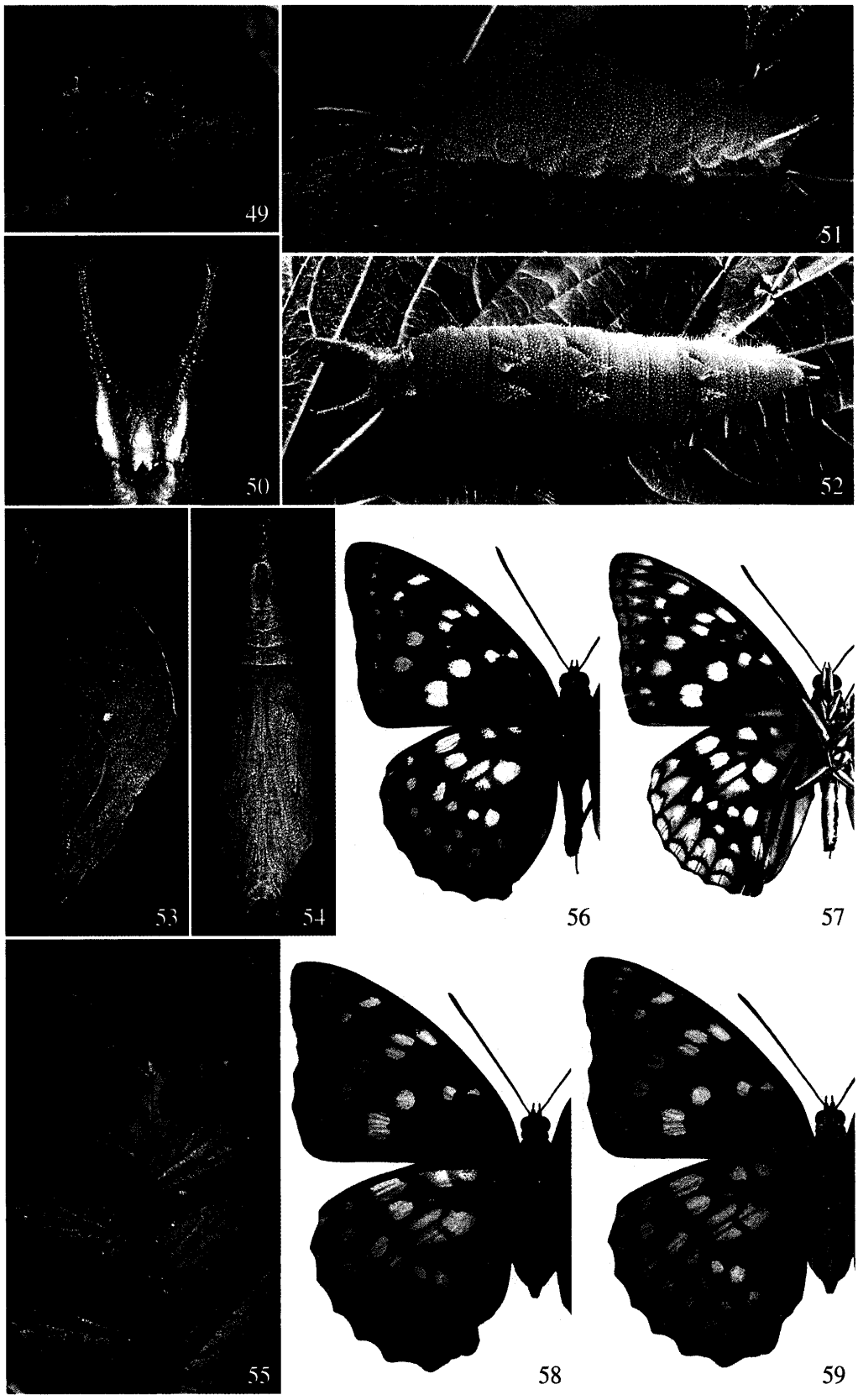

Figs 49–59. *Sasakia charonda*.
49: Overwintering larva. 50: Last instar larva head. 51–52: Last instar larva. 53–54: Pupa. 55: Food plant (*Celtis biondii*). 56–57: Male. 58–59: Female.

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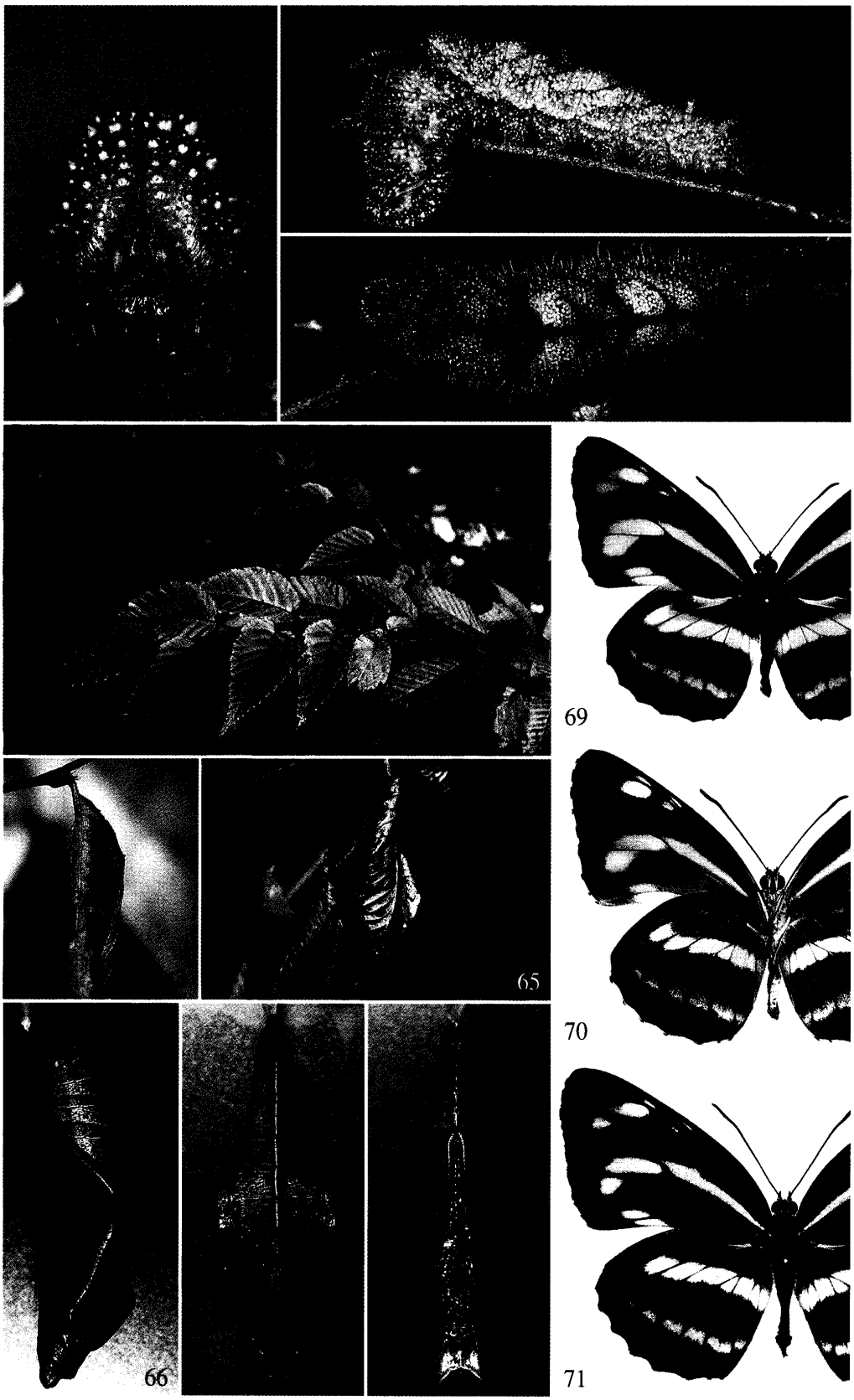

Figs 60–71. *Neptis manasa*.
60: Last instar larva head. 61–62: Last instar larva. 63: Food plant (*Carpinus laxiflora*).
64–65: Overwintering larva. 66–68: Pupa. 69–70: Male. 71: Female.

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Larval food plant: *Celtis sinensis*, *C. biondii*, *C. vandervoetiana** / Ulmaceae
*This is a new food plant record.

(5) *Neptis manasa* (Figs 60–71)

Habitat: Roadsides along valleys about 500m~1400m in altitude.

Larval food plant: *Carpinus laxiflor*a, *C. londoniana* / Betulaceae

Larva: until the third instar the young larva leaves the midrib uneaten, and makes a frass chain at its tip.
Many larvae were found on dry leaves of trees growing on sunny roadsides.

Pupa: Pupation takes place on a dry leaf.
This is the first report on the early stages.

(6) *Chrysozephyrus rarasanus* (Figs 72–84)

Habitat: In forest along narrow valleys at altitudes of about 1000~1200m, populated by trees such as *Fagus*, *Castanopsis*, *Pasanis*, *Carpinus*, *Machilus*, *Celtis*, *Acer*, *Magnolia*, *Acanthopanax*, *Robinia*, *Zanthoxylum*, *Prunus* and shrubs of Cyperaceae, Poaceae, Zingiberaceae, Dioscoreaceae, and Urticacae in the understory.

Larval food plants: *Quercus sessilifolia* / Fagaceae

Ovum: The ovum is white in color, about 1.0mm in diameter (large for this genus).
The ovum is laid singly at the base of a bud within a cluster of dormant buds at the tips of twigs approximately 4~6 m above the ground. It is found only on green type buds, not on brown type buds.

Larva: The last instar larva is reddish brown in color. The larva fed well on other *Quercus*.
This is the first record from the Nanling area.

(7) *Tongeia potanini* (Figs 85–95)

Habitat: near wet rocky cliffs along valleys where the food plant grows, about 500~1200m in altitude.

Larval food plants: *Oreocharis auricula* / Gesneriaceae
We found ova and larvae on the reddish purple flowers. *Boea rufescens* was also reported by Koiwaya (1989) at Shilin (Yunnan, 1800m in altitude).

Ovum: The ovum is laid singly on the flowers, and is pale bluish white in color.

Larva: The larvae are found on the flowers. They eat only flowers in summer. We did not find larvae in winter although many feeding marks were seen on the leaves. The final instar is pale reddish purple in color.

Pupa: The pupa occurs in two color types , pale brown and pale green.
This is a new food plant record.

Acknowledgments

We would like to express our cordial thanks to Mr Kazuhiko Morishita, Mrs Yoshiko Igarashi, Dr Masaya Yago and Dr Mamoru Owada for their kind and useful suggestions. We deeply thank the late Dr Sumihiko Hatsushima for identification of food plants, and Mr Gong Yuening of The Nanling National Nature Reserve for his kind treatment for the project, and also Dr Chen Liusheng of Shihezi University for his cooperation and assistance.

This study is partly supported by National Natural Science Foundation of P. R. China (No.30570211, 40971037)

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摘　要

広東省南嶺地域における蝶の幼生期の調査 (3) (原田基弘・大島良美・吉田良和・王　敏)

我々は2006年の秋から広東省北部に位置する南嶺山地周辺に於いて蝶の幼生期探査のプロジェクトを続けてきたが，2009年冬期で一応の区切りをつけ，これまでの成果を順次報告していく．しかし，調査研究途上の種類もあり，今後も機会を得てこのプロジェクトは継続していくつもりである．

今回の調査報告では約35種の蝶の幼生が観察解明された．それらの食餌植物を示すとともに，シナフトオアゲハ，マルバネクロヒカゲモドキ，トリマクラクロヒカゲ，オオムラサキ，ミナミキイロミスジ，ララサンミドリシジミ，ポタニンクロツバメシジミについて記述し，生態およびそれらの食樹の写真を示した．

(Received December 21, 2010. Accepted February 9, 2011)

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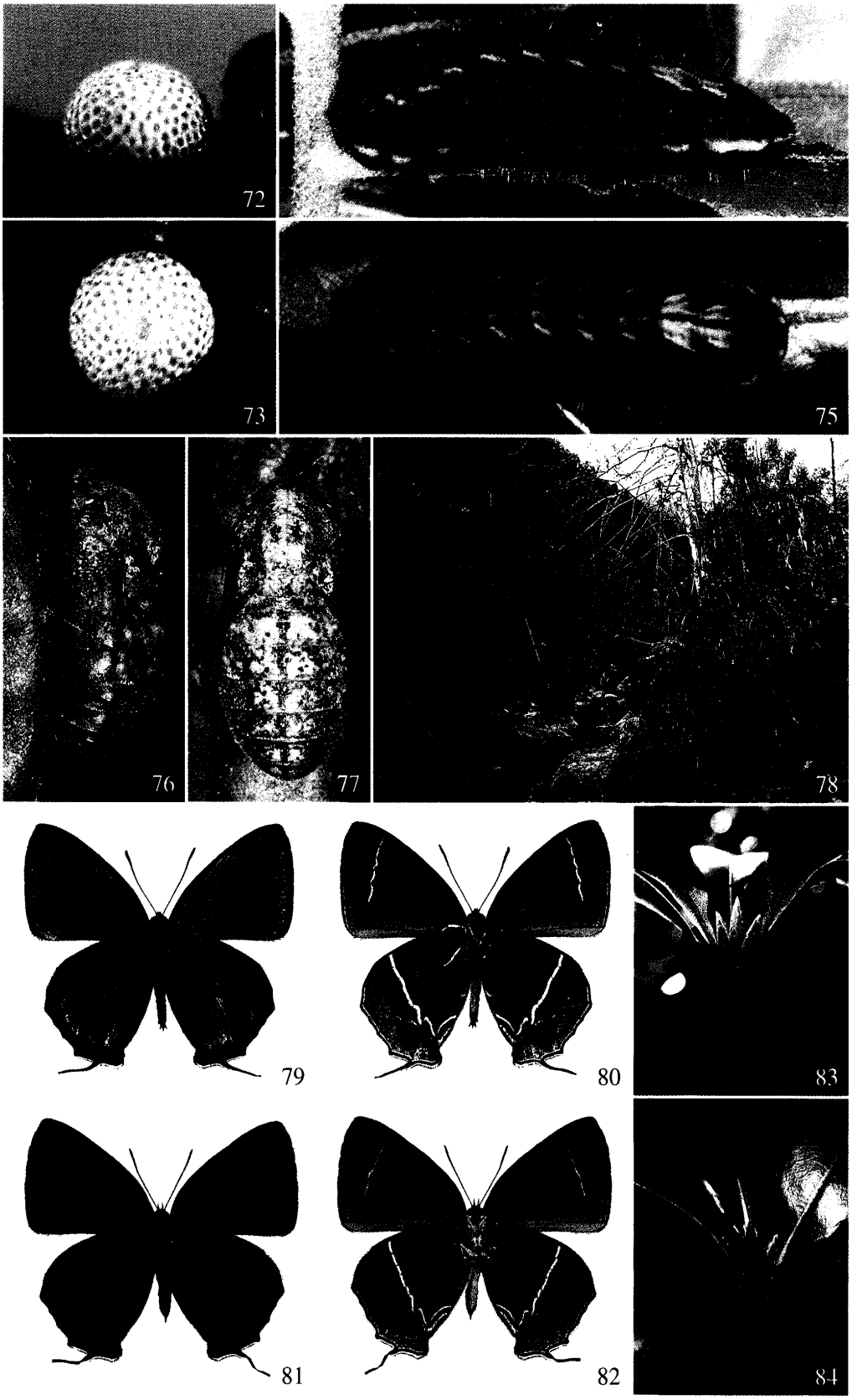

Figs 72–84. *Chrysozephyrus rarasanus*.
72–73: Ovum. 74–75: Last instar larva. 76–77: Pupa. 78: Habitat at Nanling area about 1000 m~1200 m. 79–80: Male. 81–82: Female. 83–84: Food plant (*Quercus sessilifolia*).

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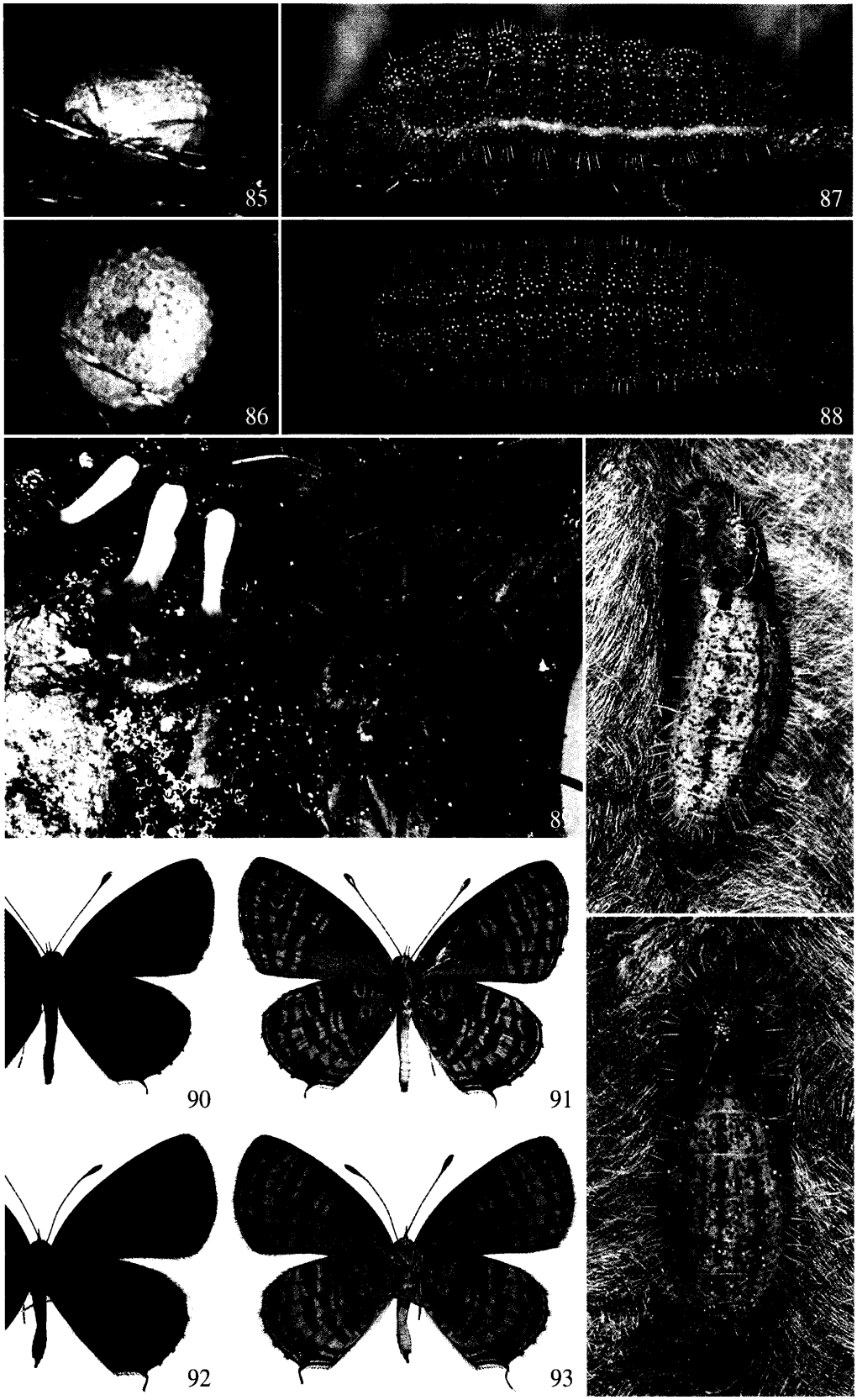

Figs 85–95. *Tongeia potanini*.
85–86: Ovum. 87–88: Last instar larva. 89: Food plant (*Oreocharis auricula*). 90–91: Male. 92–93: Female. 94–95: Pupa.

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